Available online at www.sciencedirect.com

SciVerse ScienceDirect

Procedia - Social and Behavioral Sciences 46 (2012) 2262 – 2266

Procedia
Social and Behavioral Sciences

WCES 2012

What do we know about the use of social media in medical education?

Marius Călin Popoiu[a], Gabriela Grosseck[b]*, Carmen Holotescu[c]

[a]*University of Medicine and Pharmacy Victor Babeş, P-ţa Efitimie Murgu 1-2, Timişoara, România*
[b] *West University of Timişoara, 4 Bd. Vasile Pârvan, 300223 Timişoara, România*
[c]*Politehnica University, 2 Bd. Vasile Pârvan, 30222 Timişoara, România*

Abstract

In the last years there has been a growing interest in using social media in every area of higher education (from political and social sciences towards engineering or medicine disciplines), with tools and technologies such as blogs and microblogs, folksonomies, RSS feeds, wikis, media-sharing applications, networking sites or other social artifacts. When applied to medical education, social media is seen to hold remarkable potential to help both medical educators / doctors, physicians, librarians and students to enter in the web 2.0 era, enhancing their teaching-learning experiences through customization, personalization, and rich opportunities for networking and collaboration. The purpose of this paper is to promote scholarly inquiry about the development and adoption of best practice in teaching and learning in medical education with social media. Our main objectives are to introduce theoretical aspects of using social media and its potential impact on medicine and healthcare, and how social media is currently being employed for medical education.

Keywords: medical education, social media, web 2.0, Medicine2.0;

1. Medicine 2.0 = matching medicine with web 2.0 technologies

The year 2004 established Web 2.0 as a term designating an entire range of interactive and collaborative aspects of the Internet, as well as new ways of approaching and exploiting the organizational possibilities of the Web. Therefore, digital content and information is no longer made available to Internet surfers only by the mass media, but also by private individuals, connected with one another via online informa(tiona)l networks, who contribute and participate actively in providing and disseminating information all over the globe through the Web. Typical examples of these new aspects are micro/blogs, wikis, sharing services – especially for media (video, audio/podcasts etc.), but also for photos, files, books, screenshots/screencasts, presentations, etc. folksonomies/social tagging, aggregation of information through RSS and, of course, networking through the social sites of the moment such as Facebook, Twitter, LinkedIn or Google+. In a strong interconnection with these tools, technologies and services has been evolving „social media" as a generic term covering a large range of Web 2.0 platforms and applications which encompasses easily-accessible web instruments that individuals can use in order to talk about, participate in, create,

* Gabriela Grosseck. Tel.: +40-256-592-266
E-mail address: ggrosseck@socio.uvt.ro

1877-0428 doi:10.1016/j.sbspro.2012.05.466

share, recommend and take advantage of information, in addition to providing online reactions to everything that is happening around them.

As a result, other fields of activity that are partially dependent on the Internet took a step towards 2.0 as well. Medicine is one of the fields that have gained important ground through the application of this concept. Therefore, „Medicine2.0" has emerged – a concept that has been increasingly used in the last five years, together with that of e-Health. If the latter term entails the computerization of medical services (such as remote surgeries by using a computer-assisted surgical robot, employing computerized applications for patient monitoring and recovery, providing digital educational support for students and residents, etc.), the former concept, Medicine2.0, is related primarily to users and their interaction with healthcare professionals (physicians, specialists, clinicians), policy/decision makers, healthcare providers, technology entrepreneurs, as well as teachers, researchers, social scientists, librarians, medical students, residents and even e-patients. In other words, when virtual worlds come into contact with real patients, it is possible for simple treatments to be provided by means of an avatar, or for recovery to happen by means of augmented reality.

In practical terms, Medicine2.0 has become a new form of doctor-patient relationship meant to prescribe medical information to patients with/through new web technologies and services, with a view to promoting health education. Thus patients come for their check-ups with questions after having previously obtained information from specialized websites or medical blogs or after having talked to other patients on forums or social networks, while physicians communicate online with their patients about treatments, symptoms or diagnostics. There is a risk that the Internet might replace the face-to-face medical check-up, which would profoundly affect the medical act of establishing a diagnosis and correct treatment in real time. Moreover, it is important for the user to be able to identify reliable medical information.

2. Insight into social media in medical education

As the medical internet is so vast, it is impossible for us to present its applications in an exhaustive manner. This is why we have selected a few examples of achievements and applications of digital medicine from the following perspectives:

- *Emerging technologies*: individualization of the medical act through the intensive use of mobile devices and wireless applications, such as the monitoring of vital signs and chronic conditions (foetal or hemodynamic monitoring in cardiac insufficiency, sleep monitoring), portable ultrasound systems, smart glucometres or high-tech pedometers that connect to iPhones via Bluetooth, phone applications used for patient evaluation, use of games (video, 3D, virtual worlds) in therapy (for instance healing acrophobia or claustrophobia).
- *Historical facts*: consulting charts, statistical data or even personal medical files online (see Google Health introduce in 2008 and announced for withdrawal in January 1, 2012 or Microsoft HealthVault or Dossia).
- *Statistical uses*: the use of social media tools for tracking health information in real time; to measure the cyber-behavior for public health in terms of users' attitudes, awareness, knowledge, attention, information needs, etc. In order to analyze information and communication patterns available on the web, back in 2006 Eysenbach (2011) coined the term „infodemiology" (the epidemiology of information) to designate the process of tracking online health information.
- *Online diagnostics*: The Pew Internet project estimates that about 80% of internet users have looked online for healthcare information, especially in search of diagnostics.
- *Cyber-psychology*: research studies focusing on the effect of the Internet and cyberspace on the psychology of individuals and groups, checking side effects, risks and interactions of medication etc.
- *Social aspects:* Physician networking sites - the presence of virtual communities, specialized online groups (such as Sermo – all physicians are verified – the members discuss clinical issues, Doctorshangout, Patients like me, Microsoft Users Health groups) or the fast growth of social networks such as Facebook and LinkedIn and the way in which they can be used for promoting health.
- *Educational trends:* Therefore, an increasing number of prestigious medical journals and organizations can be found online (e.g. British Medical Journal, World Health Organization).

- *Clinical and Research information*: On the one hand, we can discuss about the transformation of new social media into very powerful research tools (see the study carried out within the PatientsLikeMe online community based on the personal experience of community members). Although we cannot talk about a replacement of clinical studies, this approach has enormous research potential, as it is less complicated and requires less time and money. On the other hand, there are collaborative encyclopedias (such as Medpedia).

The experience of the past few years has shown that the virtual environment has dramatically transformed the practice of medicine, covering topics such as communities of practice and participatory medicine, social networking for scientists, the culture of medical disciplines on the internet, the science of sharing, etc. Thus, while patients ask questions, complain or share stories through social networking sites like Facebook, healthcare professionals try to educate patients, improve awareness, build trust and even learn from them (Kim, 2011). However, social media seemed to be underused by university teachers during their didactic activities. Thus, literature generally offers studies on the technical settings of web 2.0-based courses and social media uses for one's own professional education and knowledge sharing among faculty members Boulos & Wheeler (2007), but few cover aspects of pedagogical affordances such as:

- *Teachers' attitudes* towards using social media in academic courses (taking academics out of their usual comfort zone). In a recent survey, Rich (2011) shows that only 18.2% of medical students agree that social media are of little value in day-to-day medical practice, but 84.1% believe it poses professional and legal risks to physicians.
- *Innovations in medical education* for tomorrow's learners: using mobile applications and devices such as smartphones and tablets, qrcodes, augmented reality, virtual worlds, gamification in courses.
- *The E factor of participatory media*: engaging / enriching / empowering students' interaction and participation through web 2.0 technologies / social media.
- *Teaching / learning digital skills* like (social) curation of the web, generating audio/video/cartoon content, digital storytelling as creative projects or networking literacy (understanding how networks work) in order to improve competencies such as medical knowledge, patient care, interpersonal and communication skills, professionalism, practice-based learning etc. (Madanick, 2011).
- *Ethical concerns* ranging from digital identity / digital citizenship to proper professional behavior in the use of social media: confidentiality, defamation, doctor-patient boundaries (Chretien, 2009; Jain, 2009) and following university regulations / the academic social media policy, intellectual property issues, Creative Commons license arrangements, concept of „information philanthropy" (Doyle, 2011) etc. In this sense, see the guide to online professionalism for medical practitioners and medical students - a joint initiative of several Australian and New Zealand associations.
- *Evaluating learning* in virtual environments enhanced by web 2.0 technologies.
- *Using open education* in terms of: open source / free software, open educational resources, open content, open access publication, open teaching, open scholarship (Courosa, 2011).
- *Facilitating learning* through personal learning networks / environments (PLEs / PLNs), peer-to-peer learning and mentoring (something truly enabled by social media technologies) – learning from experts and peers (see for e.g. StudentDoctor.net, with 300,000 registered members and over 10 million posts).
- *Institutional norms* / terms of use and best practices in the field.
- An ongoing need for *continuing social media education*: knowledge sharing, professional sharing (e.g. dialogues with colleagues about professional issues in online communities).

3. The social media challenge for medical education

Within the medical universities of Romania, information and communication technologies are only taught during the first year of study, with an emphasis on familiarizing the students with the technologies in question and developing the techniques and academic skills needed for locating specialized information, as well as for data management, document management, conducting research online, usage of statistical software etc.

As educators working in the field of medical education or in related fields, we should not forget that it is because social technologies have transformed healthcare that patients, or simply people who are concerned with their own health, have been using social media applications / tools (Twitter, Facebook, blogs, YouTube to name only a few) for a few years already, especially by means of mobile devices. We believe it is time that alongside physicians, practitioners, healthcare providers, hospitals, clinics, scientists or policymakers, pay special attention to this phenomenon. Medical higher education could be a good laboratory to focus on social media opportunities, risks and barriers for Medicine2.0. Consequently: *What do social media mean for medical education? How can social media impact on the formal education experience?* (Kim, 2011). Thus we propose to be introduce into the national curriculum courses which focuses on the medical issues not only connected to computerization but to social media as well, designed in response to the our digital natives students' motivation, knowledge and interests.

Even some students express considerable interest, others will find the topics irrelevant; some students do not believe in the legitimacy of such a course, while others cannot see its direct application to their personal or professional lives. On the other hand, many students expect to „do as they are told" when they enroll in this type of course – only to soon discover that they are expected to think independently, to prove their comprehension abilities, to participate actively and to show permanent inquisitiveness.

Following Boulos & Wheeler (2007) and Doyle's (2011) discussions we renders some possibilities and examples of using social media in medicine disciplines as a support for preparing and collecting didactic materials, evaluating and analyzing the progress made by students, putting together informative and formative presentations, time issue / management, planning the timetable and the calendar of activities, developing projects in collaboration, digital storytelling, students (electronic/mobile)portfolios etc.

- *Blogging* used as a teaching tool or just focused on news – medical and health related. We're facing a strong medical blogosphere, full of professionals' blogs, patients' blogs, reflective writing/narrative medicine blogs, medical librarians with activities such as searching for medical information, stimulating discussions, self-directed learning or reflective practice etc.
- *Microblogging* – for e.g. through Twitter accounts, can be used for advising medical students, instant feedback from experts, communicate with a broader audience, share interesting links and ideas, curate (in)flow of information, tweeting medical meetings, tweeting from the surgery, disaster management and response, etc.
- *Wikis*. Can be used as social software for collaborative writing, teamworking (nurses, pharmacists, patients, doctoral students, residents, researchers, academic clinicians etc.), sharing knowledge (encyclopaedia-style, facilitate socialization, train medical personnel, and/or running community projects (Boulos & Wheeler, 2007).
- *Photo / Slides Sharing* providing public health images that users can easily place on websites, blogs or other social media sites. It shows public health „in action", reinforce health messages, or simply present existing information in a new, visually interesting format.
- *Audio / Video Sharing*: Podcasts for lectures, general school information, for describing different healthcare issues. There are several questions to ask: do doctors listen or watch?; can youtube be used in teaching and learning or as a simulation tool (see the case of John Hopkins Hospitals that use videoclips to explain birth).
- *Syndication of content through RSS* feeds push content such as seasonal flu, chronic disease or emergency preparedness information. Content syndication also enables citizens to create innovative health applications by providing easier access to government tools, data and information. PeRSSonalized Medicine is an example of a customizable and multi-lingual aggregator of quality medical resources in social media provided by Webicina.com.
- *Social Bookmarking / tagging / different folksonomies and tag clouds*. Acting as an excellent discovery tool for users who share a common research interest, and facilitates the development of communities of interest and expertise (Boulos & Wheeler, 2007). E.g. teachers share with their students bookmark lists of useful web resources about different clinical conditions.
- *Social Networks* provide social tools to build communities of learning and practice (for e.g. building Facebook pages for medical school courses, Twitter posts for medical school admissions office) or they can just turn into an important factor in patient support, especially in chronic conditions.

- *Other tools* such as skype offers several features that facilitate information sharing and easy communication between doctors, patients, nursing homes, medical companies and students of medical science. Virtual reality is an interesting web 2.0 trend, especially immersive environments and multiplayer online role playing games (e.g. medical librarians have created libraries in Second Life, and offer simulated reference services through avatars).
- *Mobile technologies*: Utilizing mobile and wireless technologies offer remarkable opportunities for improving the health, safety and preparedness of people around the world. This unprecedented spread of mobile technologies as well as advancements in their innovative application to address health priorities has evolved into a new field of eHealth, known as mHealth (WHO, 2011). Because of its simplicity, immediacy, portability, affordability and availability, the potential of mobile technologies for sharing health information and collecting disease/health data represents a tremendous opportunity.

4. Final thoughts …

Consistent with social media trends in general, medical educators have both opportunities and responsibilities (Madanick, 2011): for themselves (supporting their continuing professional development, collaborative research, academic / scholarly communication, publishing and peer review), for their patients (improve their care and empowers them to have more control over their own data about their health), for their learners and for the public (gain media coverage, fundraising etc.). Although there are many opportunities offered by web 2.0 technologies, there is an increased need for training in how to use these technologies to enhance teaching and learning to support undergraduate and postgraduate medical education.

References

Boulos, M.N.K. & Wheeler, S. (2007). The emerging Web 2.0 social software: an enabling suite of sociable technologies in health and health care education. In *Health Information and Libraries Journal*, 24, pp.2–23. Blackwell Publishing Ltd.

Center for Disease Control and Prevention (July, 2011). *The Health Communicator's Social Media Toolkit.* Available on http://www.cdc.gov/healthcommunication/ToolsTemplates/SocialMediaToolkit_BM.pdf.

Chretien, K.C.; Greysen, S.R.; Chretien, J.P. & Kind, T. (2009). Online Posting of Unprofessional Content by Medical Students. In JAMA 302(12):1309-1315. doi:10.1001/jama.2009.1387. Downloaded from jama.ama-assn.org by guest on December 1, 2011.

Courosa, A. (2011). Social Media, Networked Learning & Identity, http://www.slideshare.net/courosa/social-media-networked-learning-identity.

Doyle, D. (2011). E-Medical Education: An Overview. In A. Shukla, & R. Tiwari (Eds.), Biomedical Engineering and Information Systems: Technologies, Tools and Applications (pp. 219-238). doi:10.4018/978-1-61692-004-3.ch012.

Eysenbach, G. (2011). Infodemiology and Infoveillance: Tracking Online Health Information and Cyberbehavior for Public Health. In American journal of preventive medicine. 1 May 2011 (volume 40 issue 5 Pages S154-S158 DOI: 0.1016/j.amepre.2011.02.006).

Gămulescu, C. (Oct. 25, 2010). Medicina 2.0 „când virtual tratăm pacienți reali", http://www.underclick.ro/articol-3909-medicina-2-0-cand-virtual-tratam-pacienti-reali.html.

Iris Thiele Isip Tan. (2011). Social media & Medicine. http://www.slideshare.net/isiptan/social-media-and-medicine-6909196.

Jain, S. H. (2009). Practicing Medicine in the Age of Facebook. In New England Journal of Medicine. 361:649-651. doi: 10.1056/NEJMp090127.

Madanick, R.D. (2011). *Social Media in Medical Education: Embracing a New Medium*, paper given at the University of North Carolina School of Medicine on October 27, 2011, as part of the UNC Academy of Educators Lecture Series. Available at http://www.slideshare.net/ryanmadanickmd/lc11-015so-me-in-meded.

Miller, R. (24 Sep 2011). Perspectives on the 2011 Medicine 2.0 Conference. http://connection.asco.org/commentary/article/id/3043/perspectives-on-the-2011-medicine-20-conference.aspx.

Rich, P. (2011). Canadian physicians and social media: activity and attitudes, http://www.slideshare.net/prich/canadian-physicians-and-social-media-a-survey?utm_source=twitterfeed&utm_medium=twitter.

Social Media and the Medical Profession: the guide to online professionalism for medical practitioners and medical students. A joint initiative of the Australian Medical Association Council of Doctors-in-Training, the New Zealand Medical Association, Doctors-in-Training Council and the New Zealand Medical Students' Association and the Australian Medical Students' Association, http://ama.com.au/socialmedia.

World Health Organization - WHO (2011). *mHealth: new horizons for health through mobile technologies: second global survey on eHealth*, http://www.who.int/goe/publications/goe_mhealth_web.pdf.